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1999-06-21

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DEVICE FOR AN INHALER

TECHNICAL FIELD

The present invention relates to a device for use with an inhaler, said 5 inhaler comprises a body, a supply of medicament, a metered dose compartment, an air passage with an opening for a patient to inhale through, means for delivering a metered dose from the metered dose compartment during inhalation, and a mouthpiece, wherein the mouthpiece is provided with a front end to be placed in the patients 10 mouth and is in fluid contact with said opening.

BACKGROUND OF THE INVENTION

Inhalers for inhaling medicament comprises a body containing a supply 15 of medicament, an air passage and a mouthpiece in contact with the air passage, wherein, upon use, the patient puts the mouthpiece in his mouth whereby a metered dose of medicament is dispensed in the air passage and inhaled by the patient.

The mouthpiece is generally a piece of pipe, either circular in cross- 20 section or somewhat formed to correspond to the patients mouth, that is fixedly attached to, and protrudes from, the body of the inhaler.

In order to protect the mouthpiece when the inhaler is not in use, the 25 inhaler is arranged with a protective cover or the like. In the simplest cases, the protective cover is a kind of capsule that can be pressed over the mouthpiece and is held in place by friction or snap-fit. A drawback with the capsule is that it is very easy to drop or loose it.

Most recent inhalers are provided with a protective cover in the form of 30 a lid pivotably arranged to the body of an inhaler. The lid is designed such that when in a protecting position, it encloses the mouthpiece protruding from the body, and when the inhaler is to be used, the lid is

swung away so as to provide free access to the mouthpiece. With this design the protective means can not be dropped or lost since it is attached to the inhaler.

5 The general problem with the above inhalers is that the mouthpiece is fixedly attached to the inhaler body, making them rather bulky. A general desire from users is that the inhaler should be as small as possible so that it could be stored away conveniently when not in use, for example in the breast pocket or the like. This is not really the case
10 with the present designs. Another desire from the users is that the inhaler should be easy to use in general and specifically easy and quick to activate as to inhale a dose. The activation of the inhaler may be critical if the patient suffers from a sudden reduction of the respiratory function. The inhaler must then be ready to use almost at an instant.

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BRIEF DESCRIPTION OF THE INVENTION

The purpose of the present invention is to provide a mouthpiece without the above problems. This is solved according to one aspect of the invention with a device according to the preamble of the description,
20 characterised in means for moving the mouthpiece from a rest/protected position where the mouthpiece is arranged substantially within said body to an activated/inhaling position where the front end of the mouthpiece protrudes from the body of the inhaler.

25 According to a further aspect of the invention, it is characterised in that it further comprises releasable fixating means for releasably fixating the mouthpiece in the two positions.

According to yet another aspect of the invention, it is characterised in
30 that the fixating means comprises a protective cover/lid for holding said mouthpiece in the resting position.

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According to a further aspect of the invention, it is characterised in that it further comprises activating means to set the inhaler ready for delivery of a subsequent dose and that the activating means are handled by the protective cover/lid.

5

With a device according to the invention, several advantages are obtained. Due to that the mouthpiece is arranged inside the inhaler body when not in use, the size of the inhaler can be made smaller, and also a much smoother shape can be obtained since there are no protruding parts. When the inhaler is to be used, it is activated whereby the mouthpiece is moved somewhat outside the body so as to enable the user to inhale through it.

15 Preferably the inhaler comprises a protective cover which protects the mouthpiece when not in use, and keeps the mouthpiece in place.

Preferably also, the mouthpiece is arranged with means for releasably holding the mouthpiece in place in the activated position in a well-defined position relative the body.

20 When the protective cover/lid is arranged to an activating means, which sets the inhaler ready for a subsequent dose, by refilling dose compartments and placing the activating mechanism of the inhaler in a ready state, the inhaler is "charged" after a dose has been delivered to the patient. This means that the inhaler is ready to use instantly 25 without any further actions than to open the inhaler, which is of importance during critical medicating.

30 Further aspects of and advantages with the present invention will become apparent from the detailed description of embodiments of the invention and from the patent claims.

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BRIEF DESCRIPTION OF THE DRAWINGS

In the detailed description of the embodiments, reference will be made to the accompanying drawings, of which,

5 Fig. 1 is a detailed view of a part of an inhaler in cross-section with a first embodiment of the invention,

Fig. 2 is a detailed view of a part of an inhaler in cross-section with a second embodiment of the invention,

10 Fig. 3-6 shows the function of the first embodiment,

Fig. 7-9 shows the function of the second embodiment, and

15 Fig. 10 shows an example in connection with an inhaler for aerosol driven fluid medicaments.

DETAILED DESCRIPTION OF THE INVENTION

An inhaler 10 comprising a device 11 according to the invention consists of a body 12, where only the lower part is shown in the drawings, a compartment 14 containing medicament, an air passage 16 and an opening 17. The compartment is in a known way connected to the air passage 16 for dispensing of a metered dose of medicament to the patient during inhalation.

25 The device according to the invention comprises a mouthpiece 18 with a back and a front end 20, 22 in fluid communication with the air passage. In the embodiment shown in Fig. 1 and 3, the back end 20 is pivotably arranged to an axis 24 inside the body so that the mouthpiece 30 may be pivoted between a rest/protected position, Fig. 6, to an activated, ready-to-use position, Fig. 1 and 3. A torsion spring 26 is arranged between the mouthpiece and the body for urging the

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mouthpiece towards the activated position and for holding it in that position.

5 A protective cover or lid 28 is pivotably arranged to an axis 30. The inside of the cover is arranged with a protruding surface 32. When the inhaler/mouthpiece is activated and ready to use, the mouthpiece has swung to its protruding, inhalation, position by the torsion spring, whereby the upper side surface of the mouthpiece abuts the upper edge of the opening 17 pushed by the spring.

10 When the patient has inhaled the dose of medicament, he closes the cover by pivoting it. The inner surface of the cover then comes in contact with the front end of the mouthpiece, which surface pivots the mouthpiece into the body, Fig. 4 and 5. When the cover is completely 15 shut, it is held in place by a fixating means (not shown) thereby holding the mouthpiece in the rest/protected position.

Fig. 2 and 7-9 shows another embodiment of the invention, where the same components have the same reference numerals.

20 In this embodiment the mouthpiece is arranged slidable in the body. The mouthpiece is arranged with protrusions 34 attached to opposite side of the mouthpiece. The protrusions are slidably arranged in grooves 36 in the body. The inner end of the mouthpiece is arranged with a downward extending arm 38. A pusher spring 40 is arranged 25 between the mouthpiece and the body. An enclosing wall 42 is arranged around the mouthpiece. With this design the whole interior of the body may act as an air passage for the inhaling air, and thus no specific air passage is to be arranged and connected to the mouthpiece. The wall 30 also serves as a guide and support for the mouthpiece.

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When the inhaler is activated, the mouthpiece protrudes through the opening by the spring and held in this position, while the protrusions abut the outer ends of the grooves. When the patient has inhaled the dose of medicament, he closes the cover by pivoting it. The inner 5 surface of the cover, then pushes the mouthpiece whereby it slides in its longitudinal direction 42 by the protrusions and the groove.

Fig. 10 shows an example of an inhaler for aerosol driven medicaments with a pivoting mouthpiece. The pivoting point 50 is placed such that 10 the nozzle 52 in fluid communication with the canister 54 is in line with the mouthpiece 18 when it is in the inhaling position. A general desire in this respect is that the pivoting point is placed as close to the canister/nozzle as possible to minimise the height of the inhaler, and as far to the protruding side of the inhaler/mouthpiece as possible so that 15 the mouthpiece protrudes such an extent that it is easily placed in the mouth. The pivoting mouthpiece is also provided with a covering wall 56, which, when the mouthpiece is in the inhaling position, covers the interior of the inhaler, which may comprise other mechanisms for handling the inhaler. The protective cover/lid may also be arranged 20 with holding means, not shown, for preventing the mouthpiece to pivot back when in the inhaling position.

For the different embodiments, the protective cover/lid may be opened 25 by pressing or sliding a button, lever or the like, and placed on the inhaler in such a way as to coincide with the ergonomical conditions of the user. In order to ensure that the cover is not opened accidentally, it may comprise two buttons or activating points that have to be pressed or activated at the same time. It is also conceivable that the protective cover is a sleeve, for example slidable in the longitudinal direction of the 30 inhaler. The sleeve may also be so long that it constitutes the major outer surface of the inhaler, and that the user holds the sleeve when holding the inhaler. The upper part of the sleeve is open, through which

the inhaler body protrudes. By pressing the upper end of the body downwards, it slides inside the sleeve, whereby the lower part of the body, comprising the movable mouthpiece, is arranged below the sleeve, thus exposing the mouthpiece, and the inhaler is ready to use.

5

The device can further be provided with means for reactivating, returning and recharging means of the inhaler after delivery of a dose. These means may include placing the inhaler in a ready-to-use state, wherein the metered dose compartment is refilled/recharged, that the 10 means for delivering a dose, like pressure springs acting on an aerosol canister, are re-tensioned, and the like. In this context, reference is made to the Swedish patent application No. 9902349-1, which hereby is incorporated in its entirety. Preferably these means are activated by the protective cover/lid when it is closed. Tensioning of springs and the like 15 is facilitated in that the protective cover/lid may be used as a lever, thereby reducing the force needed.

It is to be understood that the invention is not limited to the 20 embodiments described above and shown on the drawings, but may be altered within the scope of the patent claims.

In this respect it is conceivable that the mouthpiece may be pivotable around a vertically arranged axis instead of a horizontal axis, which axis may coincide with the outlet of the metered dose compartment.

25 This design has the advantage of requiring less space in that the mouthpiece is swung sideways in and out from the inhaler body, thus reducing the height of the inhaler. It is also conceivable that the mouthpiece may be formed by several telescopically acting parts in order to obtain the protruding effect.

30

The moving action of the mouthpiece from an activated position to a protected rest position may also be obtained by other means, such as

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cam-shaped ribs or protrusions or some form of linkage between the cover and the mouthpiece.

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PATENT CLAIMS

1. Device (11) for use with an inhaler (10), said inhaler comprises a body, a supply of medicament (14), a metered dose compartment, an air passage with an opening for a patient to inhale through, means for delivering a metered dose from the metered dose compartment during inhalation and a mouthpiece (18), wherein the mouthpiece is provided with a front end (22) to be placed in the patients mouth and is in fluid contact with said opening, characterised in means (24, 34) for moving the mouthpiece from a rest/protected position where the mouthpiece is arranged substantially within said body to an activated/inhaling position where at least the front end of the mouthpiece protrudes from the body of the inhaler.
2. Device according to claim 1, characterised in that it further comprises releasable fixating means (26, 40) for releasably fixating the mouthpiece in the two positions.
3. Device according to claim 2, characterised in that the fixating means comprises spring means for urging said mouthpiece to the activated position.
4. Device according to claim 2 or 3, characterised in that the fixating means comprises a protective cover/lid (28) for holding said mouthpiece in the resting position.
5. Device according to claim 1, characterised in that the means for moving said mouthpiece comprises a pivot axis (24) arranged between the mouthpiece and the inhaler, for enabling a pivoting action between the resting and activated positions.
6. Device according to claim 1, characterised in that the means for moving said mouthpiece comprises guide means (34) for sliding the

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mouthpiece along its longitudinal direction when it is moved from resting position to activated position.

7. Device according to claim 4, characterised in that it further
5 comprises activating means to set the inhaler ready for delivery of a subsequent dose and that the activating means are handled by the protective cover/lid.

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ABSTRACT

The present invention relates to a device (11) for use with an inhaler (10), said inhaler comprises a body, a supply of medicament (14), a metered dose compartment, an air passage with an opening for a patient to inhale through, means for delivering a metered dose from the metered dose compartment during inhalation and a mouthpiece (18), wherein the mouthpiece is provided with a front end (22) to be placed in the patients mouth and is in fluid contact with said opening, characterised in means (24, 34) for moving the mouthpiece from a rest/protected position where the mouthpiece is arranged substantially within said body to an activated/inhaling position where at least the front end of the mouthpiece protrudes from the body of the inhaler.

(Fig. 1)

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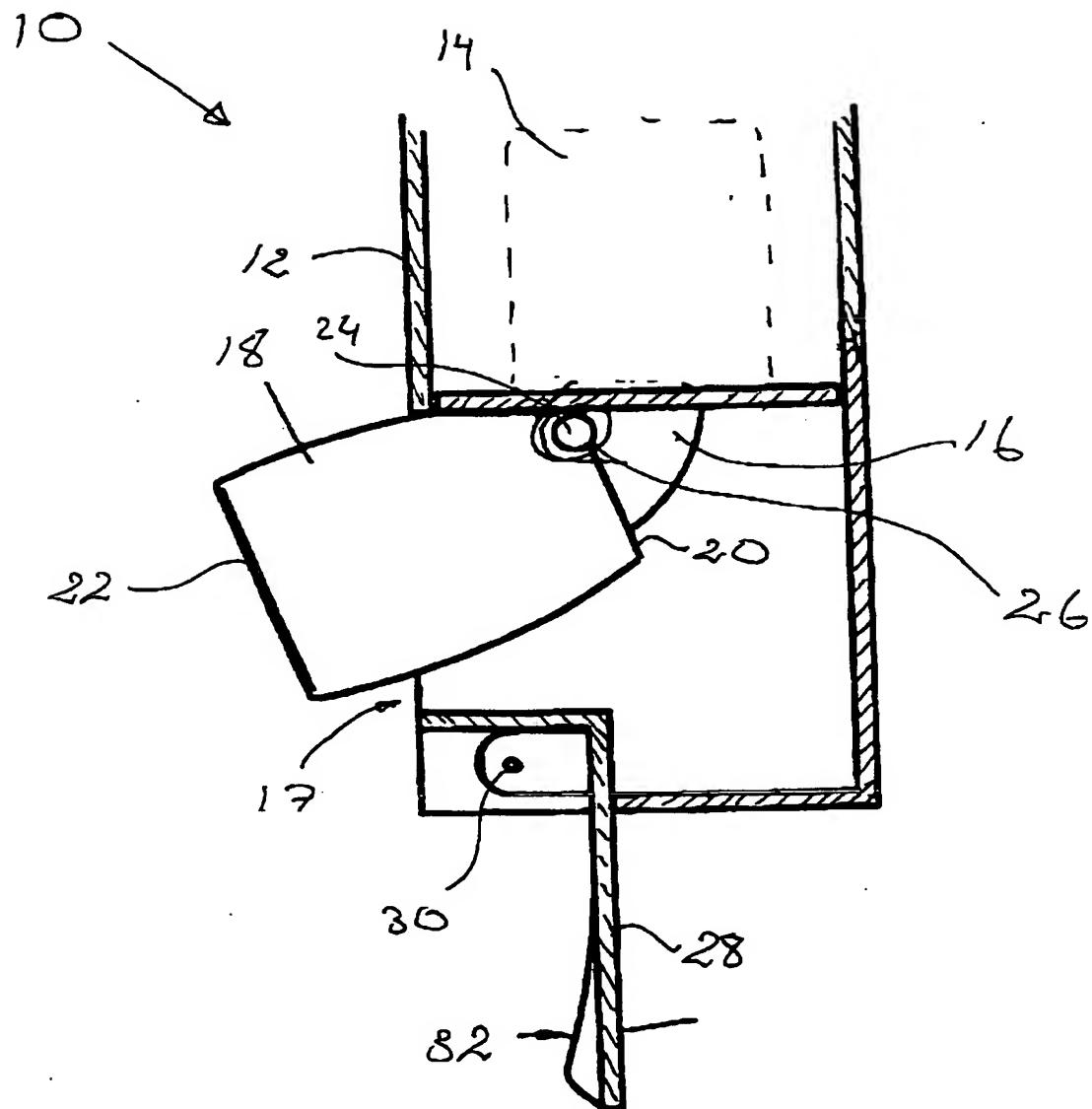


Fig. 1

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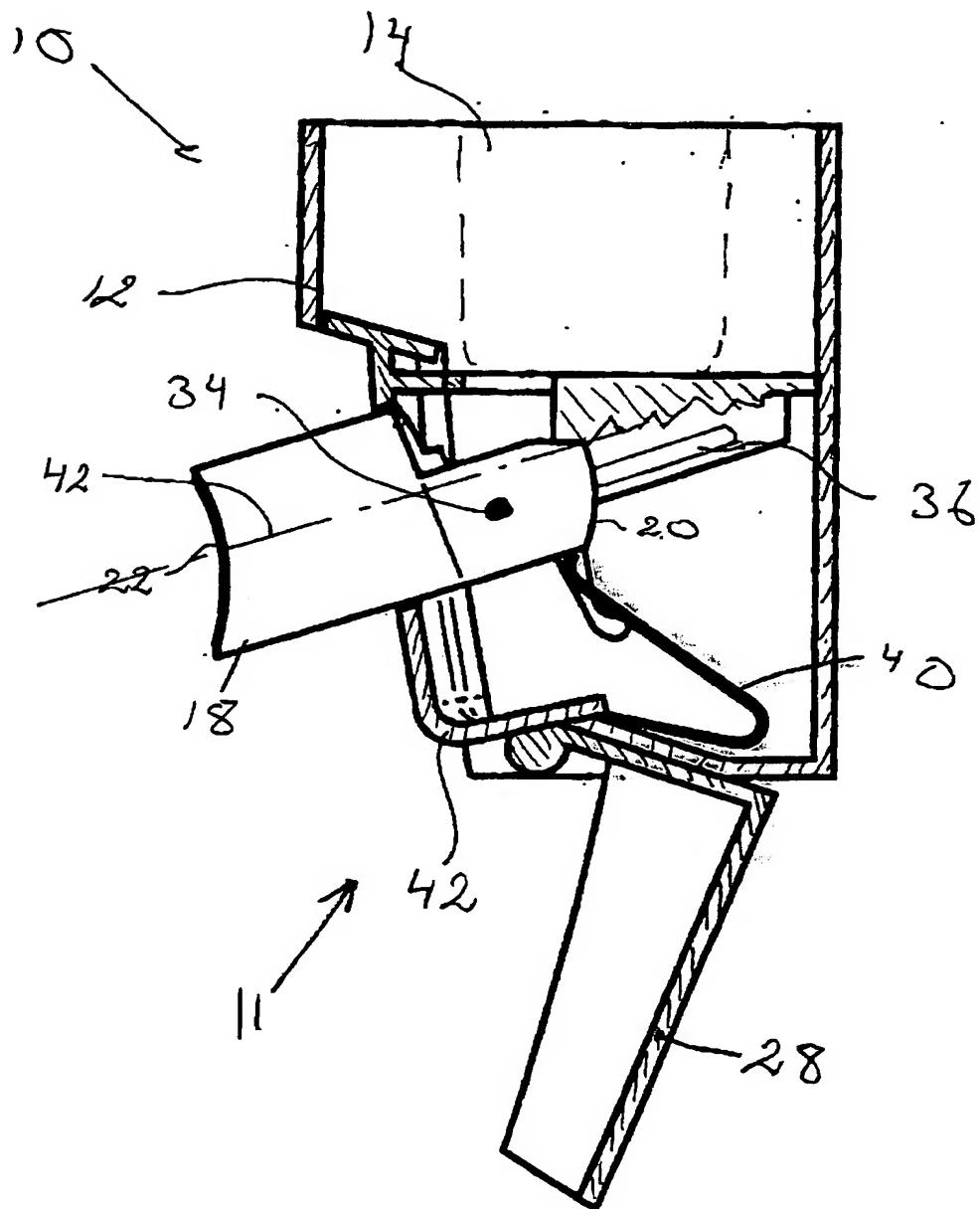


Fig. 2

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Fig. 3

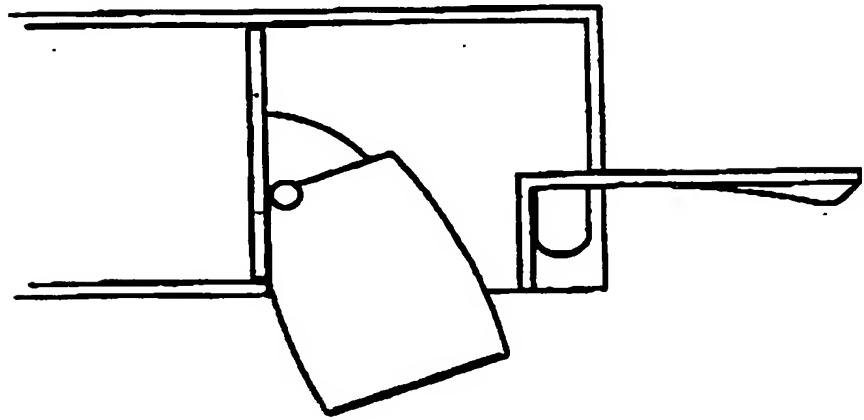


Fig. 4

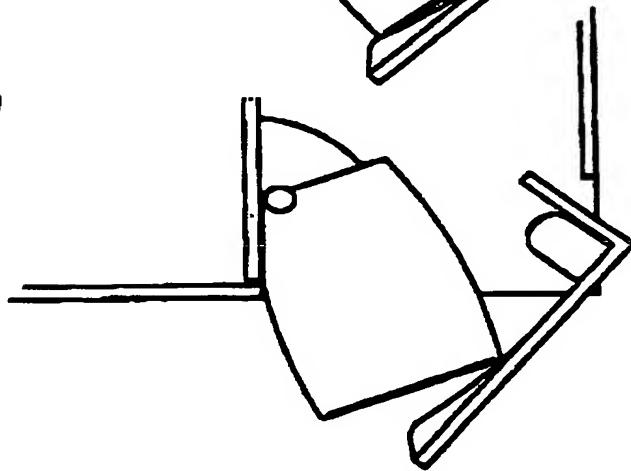


Fig. 5

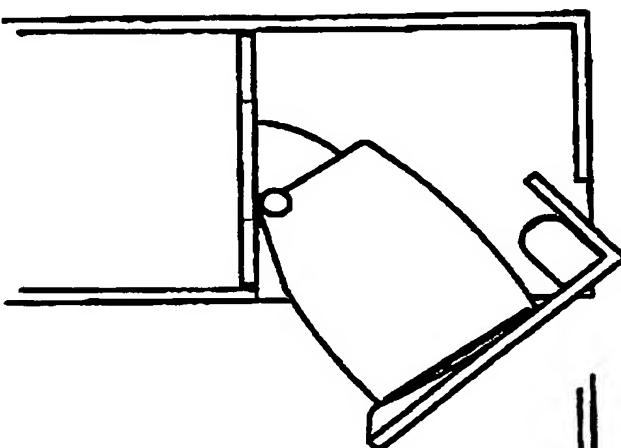
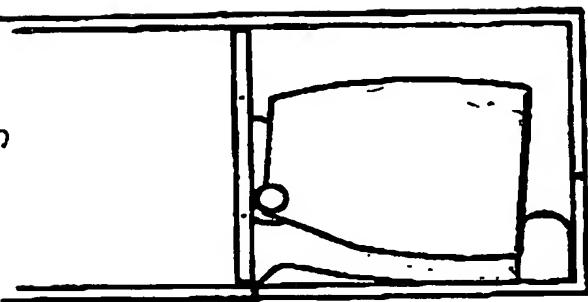


Fig. 6



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Fig. 9

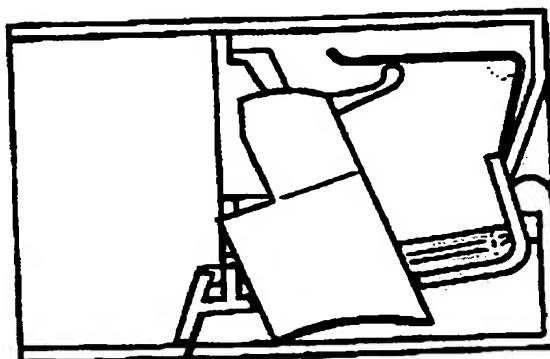


Fig. 8

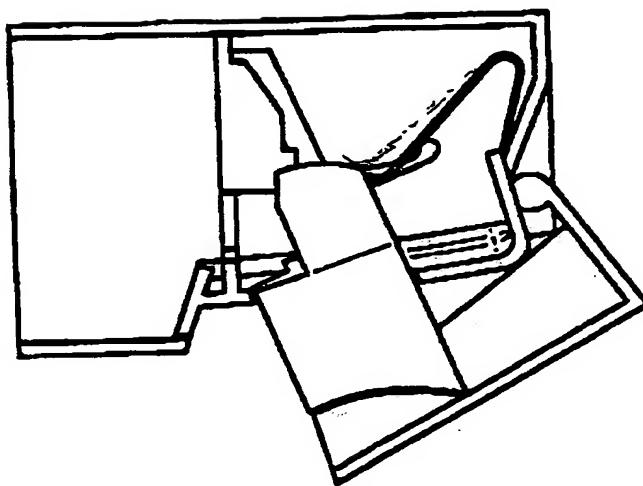
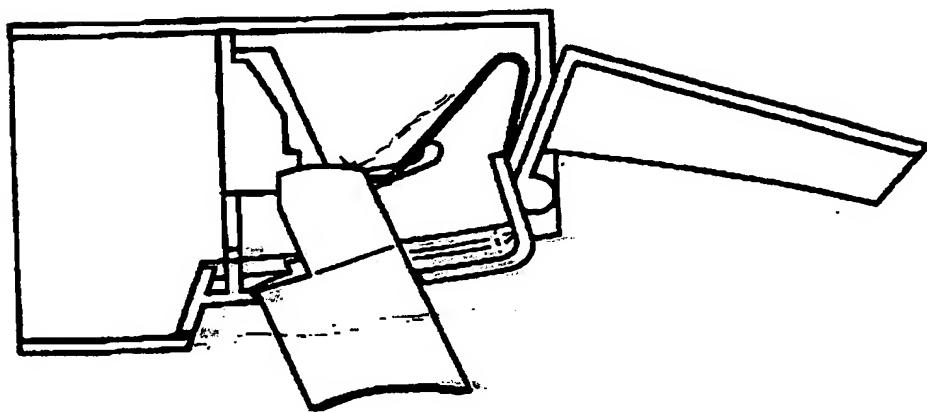
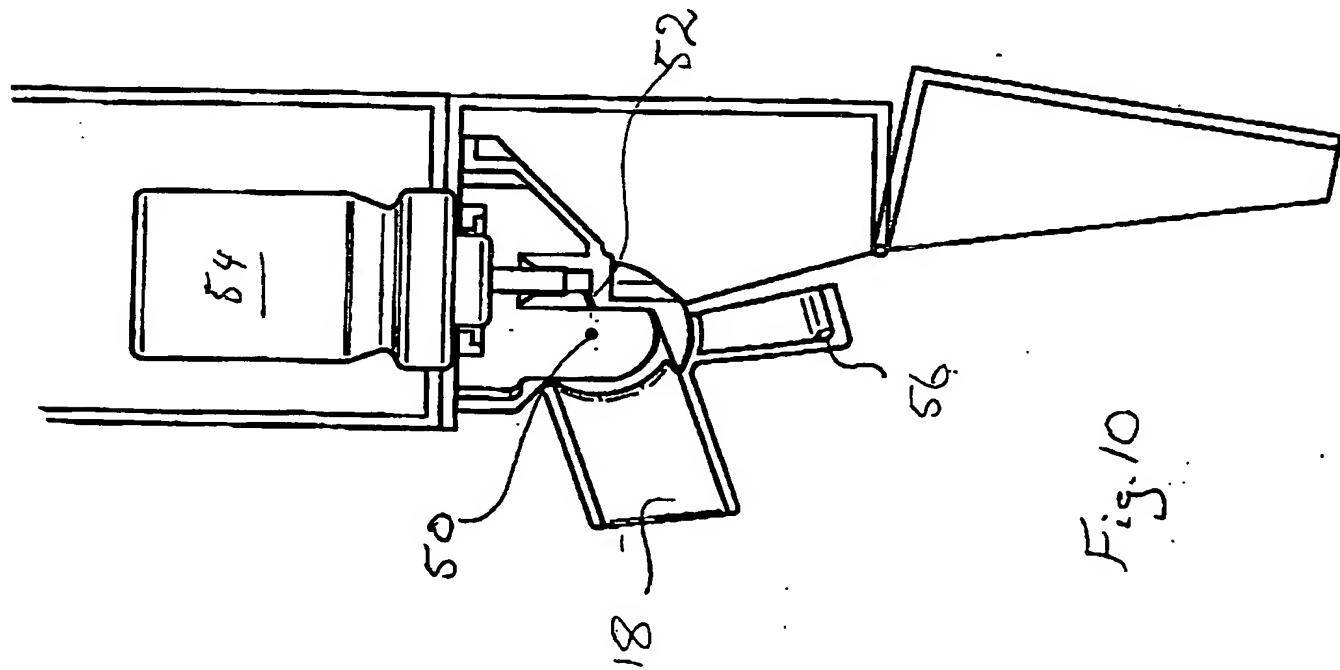
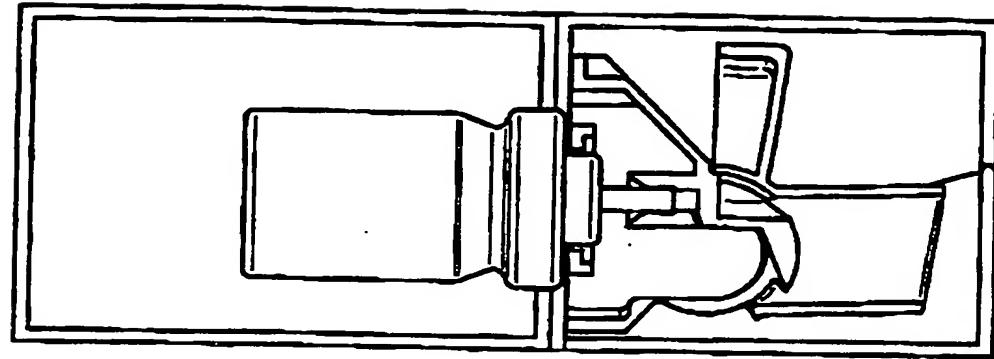


Fig. 7



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